User-Interface Design of a Web-Based Clinical Decision Support System

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BACKGROUND INFORMATION

The Internet provides a convenient and cost-effective platform for the dissemination of clinical decision support information to health care providers. This poster will describe design considerations in the development of a Web-based clinical decision support system. We converted the Clinical Algorithms component of the Pressure Ulcer Assessment and Treatment Planning System[1], originally developed in Asymetrix Multimedia Toolbook, to Hypertext Markup Language (HTML). The presentation will highlight these considerations and the user-interface design opportunities provided through HTML and related Internet-based technologies.

SYSTEM DESCRIPTION

Overall design considerations consisted of the following:

Providing the user with timely information
Clinicians use the system by responding to problem-focused questions which generate treatment recommendations. Since the system is intended for use in busy clinical settings, a major consideration in the design was the avoidance of having to navigate through multiple pages before a recommendation could be rendered. The algorithms contained in the Agency for Health Care Policy and Research (AHCPR) treatment guidelines provide an efficient means of achieving this.

Providing the user with immediate feedback
Based on evaluations received on the Toolbook version of the Pressure Ulcer System, we wanted to provide the user with a sense of "where they were" relative to the entire algorithm. The Web-based system now provides the user with a graphical depiction of the algorithm and highlights their present position. The system also visually tracks the particular path followed by the clinician as they work their way through the algorithm.

Providing the user with further explanations of relevant content
One of the benefits to the Toolbook version of the Pressure Ulcer System was the user's ability to progressively request more detailed explanations of content. The Web-based system leverages the use of HTML frames to provide these explanations without requiring the user to navigate back to the referring page. The "explain" frame also makes use of HTML's ability to display images which are useful in assisting clinicians to stage the pressure ulcer and to demonstrate treatment devices.

Providing the user with supplemental information from the World Wide Web
An important advantage of the World Wide Web implementation of this decision support system over the original Toolbook implementation is the ability to link directly to other related resources on the World Wide Web. The system now provides links to the AHCPR Guidelines page and, more importantly, to up-to-date vendor product pages for support surfaces and other products commonly used in pressure ulcer care.

EVALUATION/CONCLUSIONS

The system shows promise as a tool for assisting clinicians with the management of pressure ulcers. Formative evaluation of the system is underway. Although the initial prototype was developed in HTML, we are also developing a Java implementation which will allow reuse of the code in the development of other algorithm-based topics.

Acknowledgements

This work was supported by Grants 5 R18 HS06575, Agency for Health Care Policy and Research; by Grant 1T15 LM07092 and Grant 5 R01 LM05200, National Library of Medicine; and by an educational grant from Hewlett Packard Corporation.

References

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1091—8280/97/$5.00